DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 11, 1994

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**COPIES:** Board Members

**FROM:** Dan Burnfield

**SUBJECT:** Hanford Site Spent Fuel Storage Trip Report, February 8-11, 1994

1. **Purpose:** On February 8-11, 1994, two Defense Nuclear Facilities Safety Board (DNFSB) members and a member of the DNFSB Staff visited the Hanford Site to review the status of actions to alleviate problems observed during previous trips by the DNFSB Staff (as well as those vulnerabilities recently identified by the Department of Energy (DOE) and Westinghouse Hanford Corporation (WHC)) regarding spent fuel storage.

2. **Summary:** The planned corrective action program for the K-East Basin spent fuel lacks clear direction from the DOE-Richland Operations Office (DOE-RL) and is in its infancy. The Staff is concerned that the program lacks a system engineered basis and that aggressive action is not being taken to improve the many problems associated with the storage of spent fuel at the Hanford Site.

3. **Background:** During reviews performed by the DNFSB Staff and DOE's Office of Environment, Safety and Health during 1993, several observations were made regarding the wet storage of spent nuclear fuel at the Hanford spent fuel storage basins. These observations were classified by DOE according to the degree of vulnerability each posed to the safety of the public, the worker, or the environment. The purpose of this trip was to determine the status of actions taken at Hanford to alleviate the most serious vulnerabilities. In this light, discussions centered on WHC activities at the K-East Basin, which was noted as having the most serious vulnerabilities (corrosion of fuel and the potential release of radionuclides from this facility to the environment). The activities at the PUREX Basin, the T-Plant Basin and the dry storage locations were also discussed to determine what corrective actions are being considered at these facilities.

4. **Discussion:** As reported in the January 12, 1994 Staff report (forwarded to DOE via letter dated January 27, 1994), WHC has not taken a systems engineering approach to determine the best approach to resolve the problems associated with the storage of spent fuel at the K-East Basin.

   During this latest visit it was noted by the Staff that the apparent lack of a systems engineering approach is more of a concern than previously thought. WHC's lack of an adequate training

program and several conduct of operations concerns were identified in a Staff *Report on Training and Qualification at the Hanford Site*, dated December 22, 1994. WHC is being driven by DOE to meet a commitment made to the State of Washington in the Tri-Party Agreement to begin encapsulation by June 1994. Although DOE and WHC have been planning to encapsulate the fuel for four years, the actions required to successfully complete this operation are in their infancy. Further, DOE had taken no real actions to ensure the successful completion of this project until ten days prior to the Board's visit, when a much stronger DOE-RL project office was established. This organization mirrored a new organization set up by WHC on the same day. In discussions with the Board, DOE-RL and WHC acknowledged, however, that they had not used the systems engineering approach when forming these new organizations. In fact, there was a strong indication in the structure of the organizations and the discussions about the organizations that the project organizations do not understand the systems engineering approach.

As identified in the January report, it is not clear to the Staff that an adequate review has been completed to ensure that the encapsulation process is the best option available from an engineering and health and safety perspective.

5. **Future Staff Actions:** The DNFSB Staff will continue to follow the activities at K-East Basin to provide the necessary corrective actions regarding spent fuel storage. Future planned reviews include a review of the electrical systems and more detailed reviews of the programmatic aspects of the encapsulation project.